

CLAIMS

1. A small-sized attitude detection sensor comprising:
  - three magnetic sensing parts that detect magnetic field strength in respective directions along three axes
  - 5 perpendicular to each other;
  - and two tilt sensing parts that detect tilt angles around two axes perpendicular to each other;
  - wherein each tilt sensing part includes a cantilever having a magnet body that moves in accordance with the tilt angle, and a magnetic detection head that detects a
  - 10 displacement of the magnet body,
  - the three magnetic sensing parts and the two magnetic detection heads are each formed using a magnetic detection element of the same type, and
  - 15 at least one electronic circuit for controlling the five magnetic detection elements, the three magnetic sensing parts, and the two tilt sensing parts are disposed in a single package in the form of a module.
2. A small-sized attitude detection sensor according to
- 20 Claim 1, wherein the magnetic detection elements used to form the three respective magnetic sensing parts and the magnetic detection elements used to form the two respective magnetic detection heads are each formed using a magneto-impedance sensor element.
- 25 3. A small-sized attitude detection sensor according to

Claim 1 or 2, wherein each of the cantilever is in the form of a strip beam, one end of which is fixed to a substrate of the package via a supporting post, and the magnet body is disposed on the other end of which, the cantilever is  
5 rotatable in a direction normal to a main plane of the cantilever, and the cantilever is disposed such that the direction of the rotation is parallel with the surface of the substrate.

4. A small-sized attitude detection sensor according to one  
10 of Claims 1 to 3, wherein two electronic circuits each having a change-over switch are used in a time-sharing manner to control the five magnetic detection elements.

5. A small-sized attitude detection sensor according to one of Claims 1 to 3, wherein an electronic circuit having a  
15 change-over switch is used in a time-sharing manner to control the five magnetic detection elements.

6. A small-sized attitude detection sensor according to one of Claims 1 to 5, wherein the small-sized attitude detection sensor has a function of making a correction by subtracting  
20 the value of a magnetic field measured by a magnetic sensing part disposed in parallel with the magnetic detection head of each tilt sensing part from the value of a magnetic field measured by the magnetic detection head of each tilt sensing part.

25 7. A small-sized attitude detection sensor according to one

of Claims 1 to 6, wherein the small-sized attitude detection sensor is in the form of a small-sized surface-mounting chip with a width equal to or less than 6 mm, a depth equal to or less than 6 mm, and a height equal to or less than 2 mm.

- 5 8. A portable telephone comprising a small-sized attitude detection sensor according to one of Claims 1 to 7, a central processing unit, and a memory element for storing an operation program,

wherein the central processing unit is configured to  
10 download a signal output from each magnetic detection sensor and performs a predetermined operation in accordance with the operation program.